Amendments to the Claims

This listing replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) An apparatus for programmably manipulating a plurality of packets, said apparatus comprising:

a reaction surface configured to provide an interaction site for said packets;

an inlet port coupled to said reaction surface and configured to introduce said packets onto said reaction surface;

means for generating programmable manipulation forces upon said packets, said forces capable of programmably moving said packets about said reaction surface along arbitrarily chosen paths;

a position sensor coupled to said reaction surface and configured to track positions of individual packets on said reaction surface; and

a controller coupled to said means for generating programmable manipulation forces and to said position sensor, said controller configured to adjust said programmable manipulation forces according to said positions so that said packets move along said arbitrarily chosen paths.

2. (Previously Presented) The apparatus of claim 1, further comprising an outlet port coupled to said reaction surface and configured to collect said packets from said reaction surface.

3. (Previously Presented) The apparatus of claim 1, wherein said means for generating manipulation forces comprises a conductor adapted to generate an electric field.

4. (Previously Presented) The apparatus of claim 1, wherein said means for generating manipulation forces comprises a light source.

5. (Previously Presented) The apparatus of claim 1, wherein said manipulation forces comprise a dielectrophoretic force, an electrophoretic force, an optical force, a mechanical force, or any combination thereof.

6. (Previously Presented) The apparatus of claim 1, wherein said position sensor comprises a plurality of conductors configured to measure an electrical impedance of said packets.

7. (Previously Presented) The apparatus of claim 1, wherein said position sensor comprises an optical system configured to monitor said positions of individual packets.

8. (Previously Presented) The apparatus of claim 1, wherein said means for generating programmable manipulation forces and said position sensor are integral.

9-19 (Canceled)

20. (Previously Presented) A method for manipulating a plurality of packets, comprising:

providing a reaction surface, an inlet port coupled to said reaction surface, means for generating programmable manipulation forces upon said packets, a position sensor coupled to said reaction surface, and a controller coupled to said means for generating programmable manipulation forces and to said position sensor;

introducing one or more materials onto said reaction surface with said inlet port;

compartmentalizing said one or more materials to form said packets;

tracking positions of individual packets with said position sensor;

applying programmable manipulation forces on one or more of said packets with said means for generating programmable manipulation forces, said programmable manipulation forces being adjustable according to said positions by said controller; and

programmably moving one or more of said packets according to said programmable manipulation forces along arbitrarily chosen paths.

21. (Previously Presented) The method of claim 20, wherein said packets comprise a fluid packet, an encapsulated packet, or a solid packet.

22. (Previously Presented) The method of claim 20, wherein said compartmentalizing comprises suspending material in a partitioning medium.

23. (Original) The method of claim 22, wherein said material is immiscible in said partitioning medium.

24. (Previously Presented) The method of claim 22, wherein said reaction surface includes a coating, and the hydrophobicity of said coating is greater than the hydrophobicity of said partitioning medium.

25. (Previously Presented) The method of claim 20, wherein said applying programmable manipulation forces comprises applying a driving signal to one or more driving electrodes arranged in an array to generate said programmable manipulation forces.

26. (Previously Presented) The method of claim 20, wherein said programmable manipulation forces comprise a dielectrophoretic force, an electrophoretic force, an optical force, a mechanical force, or any combination thereof.

27. (Currently Amended) The method of claim 20, wherein said ~~sensing~~ tracking comprises applying a sensing signal to one or more impedance sensing electrodes arranged in an array to detect impedances associated with said packets.

28. (Previously Presented) The method of claim 20, further comprising interacting one or more of said packets, wherein said interacting comprises moving, fusing, merging, mixing, reacting, metering, dividing, splitting, sensing, collecting, or any combination thereof.

29-41 (Canceled)